SAFETY DATA SHEET
Permabond UV640

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Permabond UV640

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Adhesive.

1.3. Details of the supplier of the safety data sheet

Supplier

Permabond Engineering Adhesives Ltd.
Wessex Way
Colden Common
Winchester
Hampshire. SO21 1WP
United Kingdom
Tel: +44 (0)1962 711 661
Fax: +44 (0)1962 711 662
info.europe@permabond.com

1.4. Emergency telephone number

Emergency telephone UK +44 (0)1962 711 661 USA 0800 640 7599 Asia +86 (0)21 5773 4913

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Repr. 1B - H360Df

Environmental hazards Aquatic Chronic 2 - H411

Classification (67/548/EEC or 1999/45/EC) Xn;R20. Xi;R36/37/38. R43. R52/53.

2.2. Label elements

Pictogram

Signal word Danger

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Hazard statements	H302 Harmful if swallowed. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H360Df May damage the unborn child. Suspected of damaging fertility. H411 Toxic to aquatic life with long lasting effects.
Precautionary statements	P202 Do not handle until all safety precautions have been read and understood. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302+P352a IF ON SKIN: Wash with plenty of soap and water P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308+P313 IF exposed or concerned: Get medical advice/ attention.
Contains	TETRAHYDROFURFURYL METHACRYLATE, ISOBORNYL ACRYLATE, N,N-DIMETHYLACRYLAMIDE, 2-HYDROXYETHYL METHACRYLATE
Supplementary precautionary statements	P264 Wash contaminated skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P333+P313 If skin irritation or rash occurs: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse. P391 Collect spillage. P405 Store locked up. P501 Dispose of contents/container in accordance with existing Community, National and local regulations.

2.3. Other hazards

None under normal conditions.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

TETRAHYDROFURFURYL METHACRYLATE **10-30%**

CAS number: 2455-24-5 EC number: 219-529-5

Classification	Classification (67/548/EEC or 1999/45/EC)
Repr. 1B - H360Df	Xi;R36/37/38.

ISOBORNYL ACRYLATE **10-30%**

CAS number: 5888-33-5 EC number: 227-561-6

M factor (Acute) = 1 M factor (Chronic) = 1

Classification	Classification (67/548/EEC or 1999/45/EC)
Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317 STOT SE 3 - H335 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	Xi;R36/37/38. N;R51/53.

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N,N-DIMETHYLACRYLAMIDE		10-30%
CAS number: 2680-03-7	EC number: 220-237-5	

Classification	Classification (67/548/EEC or 1999/45/EC)
Acute Tox. 3 - H301 Acute Tox. 3 - H311 Eye Dam. 1 - H318	T;R23. Xn;R21/22. Xi;R36.

2-HYDROXYETHYL METHACRYLATE		5-10%
CAS number: 868-77-9	EC number: 212-782-2	REACH registration number: 01-2119490169-29-XXXX

Classification	Classification (67/548/EEC or 1999/45/EC)
Eye Irrit. 2 - H319 Skin Sens. 1 - H317	R43 Xi;R36/38

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE		1-<3%
CAS number: 75980-60-8	EC number: 278-355-8	

Classification	Classification (67/548/EEC or 1999/45/EC)
Skin Sens. 1B - H317 Repr. 2 - H361f Aquatic Chronic 2 - H411	Repr. Cat. 3;R62. N;R51/53.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Move the exposed person to fresh air. Get medical attention if any discomfort continues.

Ingestion Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention immediately.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye contact Remove any contact lenses and open eyelids wide apart. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation High concentrations of vapours may irritate respiratory system and lead to headache, fatigue, nausea and vomiting.

Ingestion Harmful if swallowed.

Skin contact Skin irritation. Mild dermatitis, allergic skin rash.

Eye contact May cause serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations. Treat symptomatically.

SECTION 5: Firefighting measures

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5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products Burning produces irritating, toxic and obnoxious fumes. Carbon monoxide, carbon dioxide, and unknown hydrocarbons.

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with sand or other inert absorbent. Transfer to suitable, labelled containers for disposal.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in closed original container at temperatures between 5°C and 25°C. Protect against direct sunlight. Never return unused material to storage receptacle.

7.3. Specific end use(s)

Specific end use(s) Adhesive.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

8.2. Exposure controls

Protective equipment

Appropriate engineering controls Provide adequate general and local exhaust ventilation. Avoid inhalation of vapours. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection The following protection should be worn: Chemical splash goggles or face shield. Personal eye protection should conform to EN 166

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Hand protection	Nitrile rubber or Viton™ gloves are recommended. Cotton or other absorbent gloves should not be worn. Gloves should conform to EN 374. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.
Other skin and body protection	Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.
Hygiene measures	Wash hands at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink or smoke. Use of good industrial hygiene practices is required.
Respiratory protection	No specific recommendations. Respiratory protection may be required if excessive airborne contamination occurs.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Acrylic
Odour threshold	Not available.
pH	Not relevant.
Melting point	Not available.
Initial boiling point and range	Not applicable.
Flash point	>100°C
Evaporation rate	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	1.1
Solubility(ies)	Slightly soluble in water. Soluble in the following materials: Organic solvents.
Auto-ignition temperature	Not available.
Viscosity	≈16000 mPa s @ 23°C Thixotropic
Oxidising properties	Not available.

9.2. Other information

Other information	Not relevant.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	The following materials may react with the product: Strong oxidising agents. Light.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures.

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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions There are no known reactivity hazards associated with this product.

10.4. Conditions to avoid

Conditions to avoid Protect against direct sunlight.

10.5. Incompatible materials

Materials to avoid Strong reducing agents. Strong oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects The toxicological properties of this product have not been fully evaluated. Avoid direct contact with skin or eyes. Do not ingest or inhale.

Skin sensitisation

Skin sensitisation May cause sensitisation by skin contact.

Reproductive toxicity

Reproductive toxicity - fertility Suspected of damaging fertility.

Reproductive toxicity - development May damage the unborn child.

Aspiration hazard

Aspiration hazard None under normal conditions.

Inhalation In high concentrations, vapours may irritate throat and respiratory system and cause coughing.

Ingestion Harmful if swallowed.

Skin contact Irritating to skin.

Eye contact Causes serious eye damage.

Toxicological information on ingredients.

TETRAHYDROFURFURYL METHACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 4,000.0

Species Rat

ATE oral (mg/kg) 4,000.0

Reproductive toxicity

Reproductive toxicity - fertility Suspected of damaging fertility.

Specific target organ toxicity - repeated exposure

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STOT - repeated exposure NOAEL 300 mg/kg, Oral, Rat

ISOBORNYL ACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	5,000.0
Species	Rat
ATE oral (mg/kg)	5,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	3,000.0
Species	Rabbit
ATE dermal (mg/kg)	3,000.0

N,N-DIMETHYLACRYLAMIDE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	216.0
Species	Rat
ATE oral (mg/kg)	216.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	519.0
Species	Rabbit
ATE dermal (mg/kg)	519.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	3.16
Species	Rat

Skin corrosion/irritation

Animal data Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation No data available.

Skin sensitisation

Skin sensitisation Not sensitising.

Germ cell mutagenicity

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Genotoxicity - in vitro Negative.

Carcinogenicity

Carcinogenicity No data available.

2-HYDROXYETHYL METHACRYLATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg) 3,000.0

Species Rabbit

ATE dermal (mg/kg) 3,000.0

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg) 2,000.1

Species Rat

ATE dermal (mg/kg) 2,000.1

SECTION 12: Ecological Information

Ecotoxicity Toxic to aquatic life with long lasting effects.

12.1. Toxicity

Toxicity There are no data on the ecotoxicity of this product.

Ecological information on ingredients.

TETRAHYDROFURFURYL METHACRYLATE

Acute toxicity - fish LC_{50}, 96 hours: 34.7 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic plants EC_{50}, 72 hours: >100 mg/l, Desmodesmus subspicatus
NOEC, 72 hours: >100 mg/l, Desmodesmus subspicatus

Chronic toxicity - aquatic invertebrates NOEC, 21 days: 37.2 mg/l, Daphnia magna

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ISOBORNYL ACRYLATE

Acute aquatic toxicity

LE(C)$_{50}$	0.1 < L(E)C50 ≤ 1
M factor (Acute)	1
Acute toxicity - fish	LC_{50}, 96 hours: 0.704 mg/l, Danio rerio (Zebrafish)
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 1.98 mg/l, Pseudokirchneriella subcapitata NOEC, 72 hours: 0.405 mg/l, Pseudokirchneriella subcapitata

Chronic aquatic toxicity

M factor (Chronic)	1
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 0.092 mg/l, Daphnia magna

N,N-DIMETHYLACRYLAMIDE

Acute toxicity - fish	LC_{50}, 96 hours: > 120 mg/l, Onchorhynchus mykiss (Rainbow trout)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: > 120 mg/l, Daphnia magna
Acute toxicity - aquatic plants	NOEC, 72 hours: 50 mg/l, Pseudokirchneriella subcapitata
Acute toxicity - microorganisms	EC_{20}, 3 hours: 430 mg/l, Activated sludge

2-HYDROXYETHYL METHACRYLATE

Acute toxicity - fish	LC_{50}, 96 hours: > 100 mg/l, Oryzias latipes (Red killifish)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 380 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 836 mg/l, Selenastrum capricornutum NOEC, 72 hours: 400 mg/l, Selenastrum capricornutum
Acute toxicity - microorganisms	EC_{50}, 16 hours: > 3000 mg/l, Pseudomonas fluorescens
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: 24.1 mg/l, Daphnia magna

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Acute toxicity - fish	LC_{50}, 48 hours: 6.53 mg/l, Oryzias latipes (Red killifish)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 3.53 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: > 2.01 mg/l, Pseudokirchneriella subcapitata
Acute toxicity - microorganisms	EC_{50}, 180 minutes: > 1000 mg/l, Activated sludge

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12.2. Persistence and degradability

Persistence and degradability No data available.

Ecological information on ingredients.

TETRAHYDROFURFURYL METHACRYLATE

Persistence and degradability	The product is readily biodegradable.
Biodegradation	- 75%: 28 days

ISOBORNYL ACRYLATE

Biodegradation	Water - Degradation 57%: 28 days

N,N-DIMETHYLACRYLAMIDE

Stability (hydrolysis)	pH7 - Half-life : > 1 year @ 50°C
Biodegradation	Water - Degradation 0%: 28 days

2-HYDROXYETHYL METHACRYLATE

Biodegradation	Water - Degradation 84%: 28 days

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Biodegradation	Water - Degradation < 20%: 28 days

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Ecological information on ingredients.

N,N-DIMETHYLACRYLAMIDE

Bioaccumulative potential	No data available.

2-HYDROXYETHYL METHACRYLATE

Bioaccumulative potential	BCF: 1.34 - 1.54,

DIPHENYL(2,4,6-TRIMETHYLBENZOYL)PHOSPHINE OXIDE

Bioaccumulative potential	BCF: 23 - 55, Cyprinus carpio (Common carp)

12.4. Mobility in soil

Mobility No data available.

Ecological information on ingredients.

N,N-DIMETHYLACRYLAMIDE

Mobility	No data available.

2-HYDROXYETHYL METHACRYLATE

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Adsorption/desorption coefficient Water - Koc: 42.7 @ 20°C

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects None known.

Ecological information on ingredients.

N,N-DIMETHYLACRYLAMIDE

Other adverse effects No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste disposal should be in accordance with existing Community, National and local regulations Empty containers may contain product residue; follow SDS and label warnings even after they have been emptied.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Waste class 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous substances.

SECTION 14: Transport information

Road transport notes Applies only to inner containers >5 litres. See SP 375

Sea transport notes Applies only to inner containers >5 litres. See 2.10.2.7 of the IMDG code.

Air transport notes Applies only to inner containers >5 litres. See SP A197 (375)

14.1. UN number

3082

14.2. UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains Isobornyl Acrylate)

14.3. Transport hazard class(es)

9

Transport labels

14.4. Packing group

III

14.5. Environmental hazards

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Environmentally hazardous substance/marine pollutant

14.6. Special precautions for user

EmS	F-A, S-F
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations	The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
EU legislation	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Guidance	Workplace Exposure Limits EH40. CHIP for everyone HSG228. Safety Data Sheets for Substances and Preparations. Approved Classification and Labelling Guide (Sixth edition) L131.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision date	08/07/2015
Revision	3
Supersedes date	15/08/2014
Risk phrases in full	R20 Harmful by inhalation. R21/22 Harmful in contact with skin and if swallowed. R23 Toxic by inhalation. R36 Irritating to eyes. R36/37/38 Irritating to eyes, respiratory system and skin. R36/38 Irritating to eyes and skin. R43 May cause sensitisation by skin contact. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R62 Possible risk of impaired fertility.

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Hazard statements in full

H301 Toxic if swallowed.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360Df May damage the unborn child. Suspected of damaging fertility.
H361f Suspected of damaging fertility.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.